

REMARKS/ARGUMENTS

This letter is responsive to the Office Action dated **September 25, 2003** and the Advisory Action dated **January 15, 2004**.

Claim Amendments

The Advisory Action indicates that the claim amendments requested in the Applicants' response dated December 16, 2003 were not entered. This response presents the same claim amendments, which are described below.

Steps (e) and (f) of Claim 5 have been amended to state that air bubbles are introduced into water in the tank to inhibit fouling of the membranes. This amendment is supported, for example, by page 5, lines 17-19 of the application.

New Claim 12 depends from amended Claim 5. New Claim 12 specifies that only some of the gas liberated from the water in the tank in step (e) is collected and returned to the tank in step (f) and some of the gas is vented to the atmosphere. Support for this amendment can be found at page 7, line 22 to page 8, line 11 of the specification.

The Applicants submit that no new matter is added by these amendments.

Anticipation Under 35 USC 102(b)

Remarks in Relation to the Office Action of September 25, 2003

The following paragraphs repeat the remarks made with the Applicants' response of December 16, 2003. Further remarks relating to the additional comments in the Advisory Action are provided below under a separate sub-heading.

In the Office Action, the Examiner rejects Claims 5 under 35 U.S.C. 102(b) as being anticipated by Cote et al. (US 5,607,593). Specifically, the Examiner argues that "when the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process" [*In re King*, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986)]. The Examiner further argues that "gases liberated from the water" is an inherent property of the water and as such would get recycled with the recycle stream." As will be explained in more detail below, applicant submits that Cote et al. does not describe a device adapted to reinject the recovered ozone back into the installation. Accordingly, applicant submits that it cannot be assumed that the device, which is not described in Cote, will inherently perform the claimed process.

Cote et al. relates to a water treatment installation that includes an ozone injection means. The installation also has means for the recovery of residual ozone. Since ozone is a toxic gas, it cannot be released directly into the environment. Accordingly, Cote et al. provides that either: (1) the recovered ozone could be destroyed; or (2) the recovered ozone could be reinjected back into the installation (see col. 4, lines 45-48). However, applicant submits that Cote et al. only describes a device that recovers and destroys the ozone. Specifically, a hood 12 is set up above the reactor 1 that enables the recovery and destruction of the residual ozone coming from the reactor 1 (see col. 9, lines 3-5, col. 13, lines 1-3, and Figures 1, 7 and 8). No alternative device is described. Since Cote fails to describe any device that takes ozone collected under the hood 12 and returns it to the tank, it cannot be assumed under the *In re King* doctrine that Cote would perform the claimed process.

The Examiner argues that various methods of injecting and recycling the recovered ozone are given in columns 4-6 of Cote et al. Applicant submits that this interpretation of Cote et al. is incorrect. Specifically, Cote et al. teaches withdrawing water from the installation, injecting fresh ozone from an ozone supply means, and returning the mixture of water and ozone back into the installation (see col. 6, lines 1-21, col. 11). In an embodiment shown in Figure 7, a recirculation loop 21 permits the injection of ozone in a biphase form through the use of ozone dissolving means (see col. 11, lines 32-47). In an embodiment shown in Figure 8, a recirculation loop 21 permits the injection of ozone in a monophase form through the use of means for the pressurized dissolving of ozone in water (see col. 11, lines 48-58). These loops 21 recirculate water from the tank and not gases already liberated from the tank water. Neither loop 21 returns collected liberated gases by way of bubbles that inhibit fouling of the membranes. Accordingly, it is respectfully submitted that Cote et al. does not anticipate Claim 5 as amended.

Further, claim 5 has been amended to state that air bubbles are introduced into the water in the tank. This step is also not provided in Cote.

Further Remarks in Relation to the Advisory Action of January 15, 2004

The Advisory Action cites lines 45-48 of column 4 of Cote as stating that residual ozone is rejected. However, for an anticipation rejection, every element of the claim must be found in the cited reference. The Applicants' claim 5 requires, in part (f), collecting the gas liberated from the water in the tank in step (e) and returning the collected gas to the tank by way of the air bubbles. The Applicants' submit that at least two aspects of part (f) of claim 5 are not found in the citation. Firstly, the Applicants submit that the ozone referred to in column 4, lines 45-48 of Cote is not a gas liberated from the water in the tank in step (e) of claim 5. Secondly, column 4, lines 45-48 of Cote do not state that the ozone is returned to the tank by way of the air bubbles. The phrase "the air bubbles" refers to the air

bubbles introduced in part (e) of claim 5 which are air bubbles introduced into the tank water to inhibit fouling of the membranes. Since Cote does not disclose these two aspects of claim 5, the Applicants submit that Cote cannot anticipate claim 5.

Obviousness Under 35 USC 103(a)

Remarks in Relation to the Office Action of September 25, 2003

The following paragraphs repeat the remarks made with the Applicants' response of December 16, 2003. Further remarks relating to the additional comments in the Advisory Action are provided below under a separate sub-heading.

The Office Action rejects Claims 6-10 under 35 U.S.C. 103(a) as being unpatentable over Cote et al., and further in view of Dickerson et al. (US Patent No. 6,221,254 B1). Specifically, the Examiner argues that Cote et al. teaches all of the limitations of Claim 5. The Examiner further argues that Dickerson et al. teaches all of the limitations in Claims 6-10.

Claims 6-10 include all of the elements recited in amended Claim 5. As explained above, Cote et al. does not teach all of the elements of amended Claim 5. Accordingly, the Applicants submit that Cote et al. and Dickerson et al. would not provide all of the elements of Claims 6-10, even if those references were combined.

The Applicants further submit that the present claims do not flow naturally from the suggestions in Dickerson. In particular, using bubbles of air to inhibit fouling is completely unnatural to Dickerson which does not even have a membrane to foul. Further, Cote does not mention that the ozone is stripping sufficient carbon dioxide from the water in the tank to cause any shift in pH, and so a need to manipulate carbon dioxide in the manner claimed is also unnatural to Cote.

The Applicants also submit that the sources of motivation suggested in the Office Action do not lead to "combining or modifying the teachings of the prior art to produce the claimed invention".

Starting from Dickerson, a desire to use carbon dioxide to control pH would not motivate a person skilled in the art to add membranes and the ozone handling equipment of Cote since the process in Cote would not enhance the process in Dickerson. Starting from Cote, there is no motivation to use carbon dioxide to control pH since there is no suggestion that the pH needs any further control, much less by the use of carbon dioxide over any other available method of controlling pH. Further, even if a person working with the Cote device did attempt to use carbon dioxide to control pH, Dickerson would lead that person to use carbon dioxide in the manner taught by Dickerson, not in the manner claimed.

Further Remarks in Relation to the Advisory Action of January 15, 2004

The Advisory Action cites the *In re Keller* case as stating that the test of obviousness is to determine what the combined teachings of the references would have suggested to those of ordinary skill in the art. The Applicants submit that this analysis occurs only after it has been demonstrated that a person skilled in the art would be motivated to combine the cited references. The Applicants dispute that this motivation exists, at least because the purpose of the extra process steps in Dickerson are intended to address an issue (using carbon dioxide to reduce the pH of a wastewater feed stream containing proteinaceous materials) that is not raised in the Cote process. The Applicants respectfully submit that the statement in the Advisory Action that Dickerson provides teaching that "could be used" with the teaching of Cote is not sufficient evidence of a motivation to combine the references. Further, the Advisory Action mentions floatation in Dickerson and alleges that Cote also teaches floatation using compressed air in column 5, lines 45-58. Column 5, lines 45-58 of Cote describe injecting air into the permeate chamber of a membrane to, among other things, drive floating material to the surface of the Cote reactor. This amounts to backwashing the membranes with a gas and could not be done for any appreciable time in the Cote reactor. The Cote process of floating material to the surface is also not the same as floatation as mentioned in Dickerson which involves using a special pump to continuously provide micro-fine bubbles into a feed stream.

Finally, the Applicants submit that it is not enough for the Advisory Action to state that aspects of the two cited references could be used together. The Advisory Action must provide *prima facie* evidence that the two cited references would be combined in a manner described by the Applicant's claims. If a person skilled in the art were attempting to combine Cote and Dickerson, which the Applicants submit would not be obvious, that skilled person might produce any number of reactors that do not have the steps of any of Applicants' claims. Although the claimed invention may not need to be expressly suggested in the references, as stated in *In re Keller*, the person skilled in the art must still be directed towards the specific combination of elements or steps in the claims under review. The Applicants submit that the Advisory Action does not provide a *prima facie* case showing how a person skilled in the art would be obviously taught to make the numerous selections, combinations, adaptations and modifications to the processes in Cote and Dickerson that would be required to match the Applicants' claims.

Appl. No. 10/092,577
Amdt. dated January 23, 2004
Reply to Office action of September 25, 2003

For the reasons above, the Applicants submit that the claims are in condition for allowance. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

SINGH et al.


Scott Pundsack
Scott Pundsack
Registration No. 47,330
Tel: (416) 957-1698